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OVID, ARATUS AND AUGUSTUS

*Astronomy in Ovid's Fasti*

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CHAPTER I  
CALENDRIC AL ASTRONOMY?

The reason for the existence of the stars in the *Fasti* may at first seem obvious: the stars are part of the calendar, especially after the Julian calendrical reform, which synchronised the celestial with the civil year.<sup>1</sup> What did the Julian reform entail? In 46 BC Caesar, with the help of the Alexandrian mathematician Sosigenes, had brought the Roman republican calendar, which consisted of alternately 355 and 377 or 378 days a year (based on lunar months and intercalation), into synchronisation with the solar year of 365 and a quarter days.<sup>2</sup> This system overcame the problem inherent in the archaic calendar, traditionally attributed to Numa,<sup>3</sup> which was a result of measuring the solar year on the basis of twelve lunar months: twelve lunations are shorter than the time-period that constitutes a solar year, and thirteen are longer. Thus the calendrical year would tend to creep ahead of, or fall behind, the solar year. In the Republic this was addressed by intercalation, but intercalation was prone to error, and could be used arbitrarily by the Pontifices, who had charge of its administration.<sup>4</sup>

The Republican system of sacred and secular days, its festivals changed as little as possible,<sup>5</sup> was placed by Caesar inside the solar year of 365 and a quarter days. Augustus

<sup>1</sup> On Caesar and calendrical reform, see (most recently) Domenicucci (1996) 85–8. For the epigraphical calendar and its importance for Ovid's *Fasti*, see Herbert-Brown (1994) 15–26.

<sup>2</sup> Sosigenes: Pliny, *NH* 18.211; Caesar's reforms: Plutarch, *Caes.* 59. The fullest description of the Caesarian reforms is in Macrobius, *Saturnalia* 1.14, written several hundred years after Caesar's activities.

<sup>3</sup> See *Fasti* 3.151–4.

<sup>4</sup> See Domenicucci (1996) 85.

<sup>5</sup> Herbert-Brown (1994) 21–2: 'For the dictator to move the festivals about in the process of his reform would have risked creating confusion in collective Roman identity, and affronting both patriotic sentiment and *ius divinum*.'

further corrected the calendar when he rectified the pontiffs' error in applying Caesar's leap year.<sup>6</sup> New festivals were added, primarily by Augustus, which commemorated deeds of the Julian family.<sup>7</sup> In 45 BC Quintilis was named Iulius, in 27 Sextilis became Augustus. These elements, combined, form the Julian year, six months of which Ovid set to verse.

Scholars have not questioned the affinity of the *Fasti* with the surviving epigraphical calendars of the Julian period; nor has the assumption that astronomy is part of the calendar been tested. It will be found that, while Ovid's *Fasti* does of course bear affinities to the *Fasti anni Iuliani* collected by Theodor Mommsen in volume I of the second edition of the *Corpus inscriptionum latinarum* (1863), the similarity in title and appearance does not fully accord with similarity in fact. What is more, a superficial structural similarity between the *Fasti* and the epigraphical calendar has been enhanced by editorial technique since 1851.<sup>8</sup>

Moreover, of the twenty or so inscribed Julian calendars collected by Mommsen, only two contain any astronomical references, and these references are extremely brief.<sup>9</sup> Was astronomy an essential element of the calendar? According to Carole Newlands, 'Surviving remains of Roman calendars suggest that information on the risings and settings of the stars was not an essential part of the state calendar, and, if provided at all, was rather scattered.'<sup>10</sup>

It is certain that astronomy is linked with the agricultural and nautical calendar, given the importance of the position of

<sup>6</sup> After Caesar's assassination in 44 BC the pontiffs misunderstood his directions for intercalation and inserted a leap year every three years instead of every four. In 9 BC Augustus, as Pontifex Maximus, decreed that intercalation be omitted for the next 16 years. This was put in motion in 8 BC, so that the first year of right functioning of the calendar was AD 8.

<sup>7</sup> On these new *feriae*, see Herbert-Brown (1994) 22–3.

<sup>8</sup> The division of the text of the *Fasti* with date-markings of a kind found in epigraphical calendars dates from Merkel's Teubner edition of 1851 (my thanks to Michael Reeve for this observation).

<sup>9</sup> These are the *Fasti Venusini* (Mommsen (1863) 300–1) and the *Fasti Antiates* (Mommsen (1863) 327–9). The *Fasti Antiates* as preserved carry only one very general astronomical reference, which concerns the sun's passage from one zodiacal constellation to another: A XV SOL INSAGITT (17 November, Mommsen (1863) 329).

<sup>10</sup> Newlands (1995) 28–9.

#### CALENDRIC ASTRONOMY?

the stars for the commencement of seasonal agricultural tasks and for the dates of the sailing season, as well as for navigation.<sup>11</sup> Virgil in the first book of the *Georgics* provides primary evidence for this in the Augustan period (although it may be argued that astronomy as an agricultural and navigational tool has taken on the value of a poetic trope by this stage). For Virgil, one of the key moments in the development of man is when he names the stars (*Georgics*) 1.137–8:

navita tum stellis numeros et nomina fecit  
Pleiadas, Hyadas, clarumque Lycaonis Arcton.

The reason why astronomy was originally vital to the agricultural calendar in Rome is obvious: the arbitrary intercalation which had been part of Republican time reckoning, and lack of synchronicity between the calendrical and solar years, had rendered the Republican calendar useless as a guide to seasonal agricultural tasks. Two surviving agricultural calendars illustrate this, the *Menologium Rusticum Vallense* and the *Menologium Rusticum Colotianum*.<sup>12</sup> Both are illustrated with astrological signs at the head of the column for each month,<sup>13</sup> and both give the place of the sun in the zodiac at any given time, as well as giving the number of days in each month and hours in the day and night, and festivals and agricultural activities throughout the year. These calendars bear little similarity to the *Fasti* apart from their astronomical notes (they do not of course give star myths).

Astronomy also appears in the Roman agricultural writers, Cato, Varro, Columella, and Pliny the Elder (*Naturalis Historia* Book 18). These writers collectively provide us with evidence for the effect of Caesar's reforms. Cato makes no

<sup>11</sup> See Santini (1975) 1. We shall see below that astronomical dates in Roman agricultural calendars were likely (at least in the Augustan period and later) to derive from Greek sources.

<sup>12</sup> Mommsen (1863) 358–60, Deglassi (1963) 284–98. For comments, see Santini (1975) 1, Newlands (1995) 28–9. I have not found any evidence that these calendars can be closely dated. They both apparently come from the same archetype, and, although according to Deglassi ((1963) 284) they are related to the pre-Caesarian agricultural calendar, in their present form they must be Augustan or later, since the month of August is named as such.

<sup>13</sup> Deglassi (1963) tab. LXXXI–LXXXII and LXXXIV–LXXXVI.

reference to any calendar, but assumes that his readers are following purely seasonal dates. Consider for example *De Agricultura* 41.1, of times for grafting: *pirorum ac malorum insitio per ver et per solstitium dies L, et per vindemiam*. Sometimes Cato refers to the movements or phases of the sun or moon, as in 37.3: *Nisi intermestri lunaque dimidiata tum ne tangas materiem. Quam effodies aut praecides abs terra, diebus VII proximis, quibus luna plena fuerit, optime eximetur*. Occasionally he will refer to the divisions of the lunar month, as at 143.2: *Kalendis, Idibus, Nonis, festus dies cum erit, coronam in focum indat, per eosdemque dies lari familiari pro copia supplicet*. The context here, however, is a religious one, about the duties of the housekeeper, which comprise various rituals. It seems that in Cato the seasonal year is important for agricultural tasks, the lunar months for religious observance: as one would expect in a writer who pre-dates the Julian reform, when for the first time the Roman calendar became useful for agriculture, since its dates tallied with the seasons.

Varro, on the other hand, explicitly juxtaposes the sidereal and solar year with the Julian calendar, as at *De Re Rustica* 1.28.1–2:

dies primus est veris in Aquario, aestatis in Tauro, autumnus in Leone, hiemis in Scorpione. cum unius cuiusque horum IIII signorum dies tertius et vicesimus IIII temporum sit primus et efficiat ut ver dies habeat XCI, aestas XCIV, autumnus XCI, hiems XXCIX, quae redacta ad dies civiles nostras, qui nunc sunt, primi verni temporis ex a. d. VII id. Febr., aestivi ex a. d. VII id. Mai., autumnalis ex a. d. III id. Sextil., hiberni ex a. d. IV id. Nov.

Varro's phrase *quae redacta ad dies civiles nostras, qui nunc sunt*, must refer to the Julian calendar, which had come into effect a few years before this was written.<sup>14</sup>

Columella borrows from Greek *paraegmata*,<sup>15</sup> as is shown

<sup>14</sup> On Varro and the Julian calendar see Domenicucci (1996) 96 n. 223.

<sup>15</sup> 'Paraegma' may be defined as an inscription on stone for public use, listing risings and settings on key dates for the year, together with notes on the weather to be expected. Holes were drilled in the stone against the lines of the text so that a peg could be moved from day to day to keep the calendar up to date. The name could also be given to written calendars. See Kidd (1997) 13–14, who provides bibliography.



both by his calculations and his citations, such as the following: *verum in hac ruris disciplina sequor nunc Eudoxi et Metonis antiquorumque fastus astrologorum, qui sunt aptati publicis sacrificiis: quia et notior est ista vetus agricolis concepta opinio; nec tamen Hipparchi subtilitas pinguioribus, ut aiunt, rusticorum literis necessaria est.*<sup>16</sup> Ideler believed that Columella worked through a Roman intermediary, perhaps the same source as used by Ovid in the *Fasti*,<sup>17</sup> since Columella and Ovid are frequently in agreement over star dates, even when these dates are erroneous.<sup>18</sup> Columella is useful in that he provides, in Book 11 of his *De Re Rustica*, an agricultural calendar in which astronomical dates for rural activities and the Julian calendar are reconciled. Throughout *DRR* 11, Columella gives Julian dates for the risings and settings of stars, combining natural and calendrical time in the same way as Ovid does in the *Fasti*.<sup>19</sup>

Book 18 of the Elder Pliny's *Naturalis Historia* is devoted to the principles of astronomy, and to the Julian year. In it Pliny deals with Caesar's reforms, the methods of astronomical observation, the solstices, times of sowing, and dates of risings and settings of stars throughout the four seasons. Pliny states throughout *NH* 18 that he is following Caesar for astronomical information correct for the latitude of Rome.<sup>20</sup>

It is possible to reconstruct the Caesarian calendar to some degree from Pliny. Some dates in the Julian calendar are erroneous when judged by the standard of exact astronomical

<sup>16</sup> *DRR* 9.14.12. For Meton and Eudoxus as paraepemmatists, see Vitruvius 9.6.3, with Soubiran (1969) *ad loc.*, Kidd (1997) 14.

<sup>17</sup> Ideler (1825) 167.

<sup>18</sup> See Le Boeuffe (1964) 329–30.

<sup>19</sup> See, for example, *DRR* 11.2.4. The juxtaposition of Columella and Ovid occurs in one at least of the *Fasti* manuscripts (*Vaticanus Latinus* 3264, fifteenth century). In this manuscript, a calendar entitled *Columellae Annus*, which runs parallel with a six-month calendar possibly derived from the poem itself, is placed at the beginning of the *Fasti*. It seems that the fifteenth-century copyist also thought the two authors comparable. On this and other *Fasti* manuscripts in the Vatican Library, see Buonocore (1994).

<sup>20</sup> For example, *NH* 18.255 (and frequently elsewhere), the expression *Caesari*, 'according to Caesar'.

dates. While some errors may be the result of Pliny's own misunderstandings, mistakes may also be a result of calculations taken further south than Italy, or of consultation of Egyptian sources.<sup>21</sup> Caesar appears to have followed Greek and Egyptian calendars, and there were still many mistakes in the Caesarian calendar, which may have been due to the interpolation of calculations made from latitudes other than that of Rome, an observation which flies in the face of Pliny's own assertion at *NH* 18.214: *nos sequemur observationem Caesaris maxime: haec erit Italiae ratio.*<sup>22</sup>

The agricultural works we have looked at span a crucial period in the history of chronology. Cato lived from 234 to 149 BC, Varro 116–27 BC; the lifetime of Columella (4 BC–AD 65) overlapped with the composition of the *Fasti*, and Pliny was somewhat later (AD 23/4–79). Cato predates the Julian calendar; he works primarily on seasonal dates. Varro, Columella and Pliny the Elder were writing after its advent. They include the stars, but align them with the Julian year. It was only after the calendrical reforms of Caesar and Sosigenes in 46 BC that writers were able to combine festivals and dates of the Roman civil year with risings and settings of stars. The irony is that, after the advent of the Julian calendar, the stars were no longer needed for the practical keeping of time.

Pliny gives sowing dates by the movements of the stars, with an important qualification: *quidam omissa caelesti subtilitate temporibus definiunt* (18.205), 'Some people ignore the nice points of meteorology and fix limits by the calendar.'<sup>23</sup> The important fact is that, in the day-to-day keeping of time for commercial and even agricultural purposes, it was easier, after the synchronisation of civil and solar years, to use calendrical dates than to observe the stars.<sup>24</sup> The Julian calendar superseded astronomical time, replacing it with a system that could exist independently of the movements of the heavenly

<sup>21</sup> Domenicucci (1996) 96.

<sup>22</sup> See Ideler (1825) 166–9.

<sup>23</sup> Trans. Rackham (1950).

<sup>24</sup> Aujac (1979) 53–4, Domenicucci (1996) 15.

bodies, and made observation of the stars unnecessary. It is also apparent from Pliny that, far from unifying time, Caesar's reforms resulted in a greater plurality of systems than previously existed: *tres autem fuere sectae, Chaldaea, Aegyptia, Graeca; his addidit quartam apud nos Caesar dictator annos ad solis cursum redigens singulos Sosigene perito scientiae eius adhibito*.<sup>25</sup>

What do we mean, then, when we talk about the Julian calendar in relation to the *Fasti*? Which calendar do we refer to when speaking of 'the' calendar? If we mean the epigraphical one, we must remember that it is not a single entity of monolithic authoritativeness.<sup>26</sup> All the Julian *Fasti* transcribed by Mommsen are fragmentary to some degree, rendering questionable attempts to discuss 'the' Julian year, as though it were a single entity rather than existing (apart from Ovid's *Fasti*) only as a series of fragmentary epigraphical representations. The date-markings which appear in modern editions of Ovid's *Fasti* are themselves not reflective of any one inscribed calendar, but an idealised *cento* of many. In addition the calendar, rather than being a 'source' for Ovid's *Fasti*, is parallel with it, a creative fusion. At any rate it is misleading to compare the *Fasti*, an extended elegiac poem, to the epigraphical calendar. Attempts to make the poem look like the epigraphical calendar are essentially false.

The Caesarian calendar was itself a pastiche of the work of different parapegmatis and astronomers; it should be considered not as a document canonical in the keeping of Roman time, but as a textualisation of the history of chronology up to that point. It is an expression of the cultural fusion between

<sup>25</sup> Pliny, *NH* 18.210–11.

<sup>26</sup> See Wallace-Hadrill (1987), Beard (1987), Scheid (1992). Contrast Feeney (1998) 104, 'These painted or carved calendars were themselves by no means religious or cult documents in any straightforward sense. They were memorials without authority. They alluded to, commented upon, and commemorated the mechanisms by which state cult was regulated, but they were not themselves those mechanisms', with Boyle (1997) 7, 'For the Roman calendar, decreed and inscribed, far from being a national, apolitical body of antiquarian lore, was a malleable system of political and ideological control, which Augustus especially used – almost to perfection.'

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Greece and Rome. This is revealed in the sources cited by Varro and Columella, which include both Roman agricultural writers and Greek parapegmatisers. For the technical chronologer, it is also revealed by the calculations the calendar contained, taken from different latitudes.

When we are dealing with ‘the’ Julian calendar we are actually discussing representations of many different kinds, often fragmentary, of a phenomenon which was by its very nature composite and manifold. The calendar is a true parallel for Ovid’s *Fasti* in the sense of its multiplicity alone. We have seen two different manifestations of the calendar contemporary with the Julian period: the inscribed calendar, which did not include a significant amount of astronomy, and the agricultural calendar, which did, reconciled with the dates of the civil year. The irony is that, while Ovid’s *Fasti* is more similar to the latter than the former, Ovid maintains the fiction of calendrical astronomy which the Julian year had actually rendered obsolete.

However, it is perhaps true to say that, whatever the multiplicity of the Julian calendar, there is almost certainly a body of astronomical theory which underlay it, even if this theory did not manifest itself in inscribed form. Ovid himself tells us that Caesar as calendrical reformer understood the stars, and, moreover, that this was because of his future divinity:

sed tamen errabant etiam nunc tempora, donec  
Caesaris in multis haec quoque cura fuit.  
non haec ille deus tantaeque propaginis auctor  
credidit officiis esse minora suis,  
promissumque sibi voluit praenosceri caelum  
nec deus ignotas hospes inire domos.  
ille moras solis, quibus in sua signa rediret,  
traditur exactis disposuisse notis;  
is decies senos ter centum et quinque diebus  
iunxit et a pleno tempora quinta die. (*Fasti* 3.155–64)

Caesar, not wanting to be a mere sojourner in the celestial palaces, but preparing himself for full privileges, worked out the exact dates of the summer and winter solstices (this I take

to be the meaning of *moras solis, quibus in sua signa rediret*, the *signa* being Cancer and Capricorn, the sun's tropics) and the exact length of the solar year, three hundred and sixty five days and one fifth (as Ovid would have it). This is Caesar as parapegmatist.

Lucan in the *Pharsalia* has Caesar refer to his calendar as surpassing the *Fasti* of Plato's pupil, the astronomer Eudoxus (fourth century BC):

stellarum caelique plagis superisque vacavi,  
nec meus Eudoxi vincetur fastibus annus. (*Pharsalia* 10.186–7)

Eudoxus is also mentioned among the parapegmatists by Vitruvius in *De Architectura* 9.6.3 (which we shall look at in a moment). He wrote the work which was versified by Aratus, the *Phaenomena*.<sup>27</sup> The scholia *ad* Lucan 10.187 posit a *Liber Fastorum* of Caesar; according to Domenicucci this was the *De Astris*, a treatise explaining the theoretical basis of the new calendar, possibly written in collaboration with Sosigenes.<sup>28</sup> This finds support in Macrobius, *Saturnalia* 1.16.39: *nam Iulius Caesar ut siderum motus, de quibus non indoctos libros reliquit, ab Aegyptiis disciplinis hausit, ita hoc quoque ex eadem institutione mutuatus est, ut ad solis cursum finiendi anni tempus extenderet*.<sup>29</sup>

What is the astronomical work of Caesar referred to here? The references may just be to the astronomical background to Caesar's reconciling of the civil and celestial years; but equally the evidence may point to a specific astronomical work. This work may have taken the form of a parapegma annotated with astronomical observations relating to the stellar phases and the zodiacal position of the sun. According to Domenicucci, it was possibly in two parts, namely a general astronomical section, incorporating astrothesis (star-mapping), and

<sup>27</sup> Or perhaps Aratus followed more closely the updated version of it, the *Enoptron* (Mirror of the Sky); see Kidd (1997) 15. Kidd 14–18 discusses the influence of Eudoxus on Aratus. For my own discussion, see below, pp. 109–14.

<sup>28</sup> Domenicucci (1996) 85–99.

<sup>29</sup> For the other ancient references, see Domenicucci (*ibid.*).

the movement of the celestial sphere and the heavenly bodies, followed by a precise *ordinatio anni*: a theoretical section, and a specific exposition of the astronomical calendar.

Domenicucci does not comment on an interesting fact: the striking similarity of his proposed reconstruction of the *De Astris* with the *Phaenomena* of Aratus. Looking at the most recent exposé of the structure of the *Phaenomena*, that of Douglas Kidd in his 1997 edition, this is easy to see.<sup>30</sup> Discounting the proem for the moment, lines 19–758 are theoretical (astrothesis, 19–461, and the principles of astronomical chronology, 462–757), whereas the second half of the poem, also known as the ‘Diosemeiai’, the ‘Signs of Zeus’, is practical, telling us what signs bring what sort of weather at what times of year, and which agricultural and nautical tasks accompany them (lines 758–1141).<sup>31</sup> Such similarity is logical, given a moment’s thought: Caesar as parapegmatist is accomplishing a task similar to Aratus’ when he transforms into verse the work of the parapegmatist Eudoxus.

Firmicus Maternus (*Math.* 8.5.2–3) links Aratus and Caesar in this way: *hae [stellae] in vicinis signorum regionibus collocatae, cum XII signis oriuntur et cum ipsis occidunt rursus, immutatum semper cursus sui ordinem reservantes. sed his stellis nomina veterum fabularum apposuit antiquitas. executus est etiam horum numerum siderum Graece Aratus poeta disertissimus, Latine vero Caesar et decus eloquentiae Tullius.* Firmicus here is talking about ‘paratellonta’, the non-zodiacal constellations that rise and set at the same time as the constellations of the zodiac: a celestial relative chronology. Much of Aratus is taken up with exposition of the same thing (*Phaenomena* 559–732). Synchronic risings and settings were thus an important part of celestial chronology, and their exegesis marks out both Caesar and Aratus as parapegmatists. Cicero (Tullius) is included in the list because he wrote a translation of Aratus, probably in the late eighties BC.

<sup>30</sup> Kidd (1997) 5–8.

<sup>31</sup> In chapter 3, I shall adopt an older division of the text of the *Phaenomena*, according to which the break between the sections comes at 732–3. This makes no difference to the basic two-part division articulated here. See below, p. 78.

This is something of a revelation: Aratus is an astronomical poet, but he is also the writer of an astronomical calendar like Caesar's. At *De Architectura* 9.6.3, Vitruvius lists Aratus among the famous Greek astronomical parapegmatists who provide him with the theoretical basis for his explanation of sundials in *De Architectura* 9. I have already referred to this passage; here it is in full:

de naturalibus autem rebus Thales Milesius, Anaxagoras Clazomenius, Pythagoras Samius, Xenophanes Colophonius, Democritus Abderites rationes, quibus e rebus natura rerum gubernaretur quemadmodum cumque effectus habeat, excogitatas reliquerunt. quorum inventa secuti siderum et occasus tempestatumque significatus Eudoxus, Eudemus, Callippus, Meto, Philippus, Hipparchus, Aratus ceterique ex astrologia parapegmatorum disciplinis invenerunt et eas posteris explicatas reliquerunt. quorum scientiae sunt hominibus suscipiendae, quod tanta cura fuerunt, ut etiam videantur divina mente tempestatum significatus post futuros ante pronuntiare.

In natural philosophy, Thales of Miletus, Anaxagoras of Clazomene, Pythagoras of Samos, Xenophanes of Colophon, Democritus of Abdera left elaborate theories on the causes by which nature was governed, and the manner in which each produced their effects. Eudoxus, Eudemus, Callippus, Meto, Philippus, Hipparchus, Aratus, and others followed up their discoveries, and, with the help of astronomical tables, discovered the indications of the constellations, of their setting, and of the seasons, and handed down the explanations to after times. Their knowledge is to be highly regarded by mankind, because they so applied themselves, that they seem by divine inspiration to declare beforehand the indications of the seasons.<sup>32</sup>

Precise measurement of the year had not been achieved until Meton and Euctemon in c. 430 BC devised a method of reckoning the days by months according to the passage of the sun through the zodiacal constellations.<sup>33</sup> They may have invented the parapegma itself. Aratus has previously been seen as something of an anomaly in this company. Jean Soubiran comments that Aratus introduces into this list of authentic parapegmatists an extremely disparate note; if the latter part of the 'Phainomena' and the 'Diosemeiai' resemble a parapegma in some ways (astronomy mixed with meteorology),

<sup>32</sup> Text and trans. Granger (1934).

<sup>33</sup> On Meton and Euctemon, see Kidd (1997) 13–14. On Hipparchus and others, see Kidd 18–23.

the form of Aratus' work, that of poetry, does not authorise Vitruvius to take him so seriously, and is in fact revealing of Vitruvius' ignorance as to the true state of science.<sup>34</sup>

However, if one looks at Aratus in the context of astronomical *paraepmata*, as translator of Eudoxus, he does not seem so anomalous. The idea of Aratus as an agricultural *paraepmatist* is supported by Virgil's use of him in the agricultural calendar of *Georgics* 1.<sup>35</sup> Aratus' task was similar to that of Julius Caesar: the ordering of the year according to the astronomical calendar. At the same time, Aratus' work begins to look very similar in its basic conception to Ovid's *Fasti*.

To conclude, then: in this chapter we have questioned, firstly whether the *Fasti* is like a Roman calendar, and secondly whether the Roman calendar as it was in Ovid's time has room for astronomy. We have seen that, while its affinities to the calendar are undeniable, one must guard against any overschematic analogy between Ovid's *Fasti* and the Roman calendar, especially since the latter is itself a complex organism.

Equally, while astronomy might underlie the Roman calendar, not least in Julius Caesar's astronomical work, which may have formed part of a body of calendrical theory, the Julian calendar had the effect of doing away with the need to observe the stars, and this is perhaps why they do not appear in its inscribed manifestation. This in turn functions to remove astronomy from the sphere of practicality and place it in the realm of fiction.

This chapter has also carried us beyond the answers to our two initial questions. In it we have seen Aratus the astronomical poet and Caesar the writer of a calendar collapsed into one another, so that now we can equally well speak of Caesar the writer on astronomy and Aratus the calendar poet. One consequence of this is that the *Phaenomena* of Aratus looks very like the *Fasti* of Ovid. We shall return to this in chapter 3. Let us meanwhile continue the debate on the wider generic field.

<sup>34</sup> Soubiran (1969) *ad loc.*      <sup>35</sup> Thomas (1988) 6–7.